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06-12-03

PATENT APPLICATION

DOCKET NO.: SFST.06USU1 (S-522,000)

IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Elisabeth Smela, et al.

Serial No.: 09/863,808

Examiner: Dougherty, Thomas M.

Filing Date: May 22, 2001

Group Art Unit: 2834

Title: ELECTROCHEMICAL DEVICES INCORPORATING HIGH-CONDUCTIVITY  
CONJUGATED POLYMERS

COMMISSIONER FOR PATENTS  
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Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

This Information Disclosure Statement is submitted:

- ☐ under 37 CFR 1.97(b), or  
(Within three months of filing national application; or date of entry of international application; or before mailing date of first office action on the merits, whichever occurs last)
- ☒ under 37 CFR 1.97(c) together with either a:
- ☐ Certification under 37 CFR 1.97(e), or
- ☒ a \$180.00 fee under 37 CFR 1.17(p), or  
(After the CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with a:
- ☐ Certification under 37 CFR 1.97(e), and
- ☐ a petition under 37 CFR 1.97(d)(2)(ii), and
- ☐ a \$130.00 petition fee set forth in 37 CFR 1.17(i)(1)  
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- ☒ A check in the amount of \$180.00 is enclosed herewith.
- ☐ Please charge to Deposit Account #50-1491 the amount of \$\_\_\_\_\_.
- At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 50-1491 pursuant to 37 CFR 1.25.
- ☒ Applicant(s) submit herewith Form PTO 1449 - Information Disclosure Citation together with copies of patents, publications or other information of which applicant(s) are aware, which applicant(s) believe(s) may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 CFR 1.56.
- ☐ A concise explanation of the relevance of foreign language patents, foreign language publications and other foreign language information listed on PTO 1449, as presently understood by the individual(s) designated in 37 CFR 1.56 (c) most knowledgeable about the content is given on the attached sheet, or where a foreign language patent is cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action which indicates the degree of relevance found by the foreign office is listed on form PTO 1449 and is enclosed herewith.

It is requested that the information disclosed herein be made of record in this application.

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Respectfully submitted,

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FORM PTO-1449

 LIST OF PATENTS AND PUBLICATIONS  
 FOR APPLICANT'S INFORMATION  
 DISCLOSURE STATEMENT

(Use several sheets if necessary)

ATTY. DOCKET NO.

SFST.06USU1

SERIAL NO.

09/863,808

APPLICANT

Elisabeth Smela, et. al

FILING DATE

05/22/2001

GROUP 2834

## REFERENCE DESIGNATION

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS
	A	5,556,770	09/17/1996	Method of preparing a composition that enhances	435	70.1

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
	AA	67484	14/06/1989	Italy	A-61F			XX
	BB	EP 0 924 033 A2	14/12/1998	Europe	B25J 9/10		XX	
	CC	WO 99/24991	20/05/1999	World PCT	HO1B 1/12		XX	
	DD	PCT/GB 98/03241	27/01/1999	World PCT	HO1B 1/12		XX	

## OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

AAA	Huang, W., Humphrey, B., MacDiarmid, A., "Polyaniline, a novel conducting polymer: morphology and chemistry of its oxidation and reduction in aqueous electrolyte," <u>J. Chem. Soc., Faraday Trans. 1</u> , vol. 82, 1986, pgs. 2385-2400.
BBB	Mazzoldi, A., Degl'Innocenti, C., Michelucci, M., De Rossi, D., "Actuative properties of polyaniline fibers under electrochemical stimulation," <u>Materials Science and Engineering C</u> , vol. 6, Elsevier Science, 1998, pgs. 65-72.
CCC	Satoh, M., Kaneto, K., Yoshino, K., "Dependences of electrical and mechanical properties of conducting polypyrrole films on conditions of electrochemical polymerization in an aqueous medium," <u>Synthetic Metals</u> , vol. 14, Elsevier Sequoia, Netherlands, 1986, pgs. 289-296.
DDD	Kaneko, M., Kaneto, K., "Electrochemomechanical deformation of polyaniline films doped with self-existent and giant anions," <u>Reactive and Functional Polymers</u> , vol. 37, Elsevier Science, 1998, pgs. 155-161.
EEE	Lewis, T.W., Spinks, G.M., Wallace, G.G., De Rossi, D., Pachetti, M., "Development of an all polymer electromechanical actuator," pgs. 520-521.
FFF	Pei, Q., Ingnas, O., Lundstrom, I., "Bending bilayer strips built from polyaniline for artificial electrochemical muscles," <u>Smart Mater. Struct.</u> , vol. 2, IOP Publishing Ltd., United Kingdom, 1993, pgs. 1-6.
GGG	Smela, E., Ingnas, O., Lundstrom, I., "Controlled folding of micrometer-size structures," <u>Science</u> , vol. 268, 23 June 1995, pgs. 1735-1738.
HHH	Otero, T.F., Rodriguez, J., Angulo, E., Santamaria, C., "Artificial muscles from bilayer structures," <u>Synthetic Metals</u> , vols. 55-57, Elsevier Sequoia, 1993, pgs. 3713-3717.
III	Kaneko, M., Fukui, M., Takashima, W., Kaneto, K., "Electrolyte and strain dependences of chemomechanical deformation of polyaniline film," <u>Synthetic Metals</u> , vol. 84, Elsevier Science, 1997, pgs. 795-796.



# REFERENCE DESIGNATION

## OTHER REFERENCES

Docket No.: SFST.06USU1

	JJJ	Chiarelli, P., Della Santa, A., De Rossi, D., Mazzoldi, A., "Actuation properties of electrochemically driven polypyrrole free-standing films," <u>Journal of Intelligent Material Systems and Structures</u> , vol. 6, January 1995, pgs. 32-37.
	KKK	Takashima, W., Fukui, M., Kaneko, M., Kaneto, K., "Electrochemomechanical deformation of polyaniline films," July 1995, pgs. 3786-3789.
	LLL	Monkman, A.P., Adams, P., "Optical and electronic properties of stretch-oriented solution-cast polyaniline films," <u>Synthetic Metals</u> , vol. 40, Elsevier Sequoia, Netherlands, 1991, pgs. 87-96.
	MMM	Kaneko, M., Kaneto, K., "Electrochemomechanical deformation in polyaniline and poly(o-methoxyaniline)," vol. 102, <u>Synthetic Metals</u> , Elsevier Science, 1999, pgs. 1350-1353.
	NNN	Della Santa, A., De Rossi, D., Mazzoldi, A., "Performance and work capacity of a polypyrrole conducting polymer linear actuator," <u>Synthetic Metals</u> , vol. 90, Elsevier Science, 1997, pgs. 93-100.
	OOO	Takashima, W., Uesugi, T., Fukui, M., Kaneko, M., Kaneto, K., "Mechanochemoelectrical effect of polyaniline film," <u>Synthetic Metals</u> , vol. 85, Elsevier Science, 1997, pgs. 1395-1396.
	PPP	Okabayashi, K., Goto, F., Abe, K., Yoshida, T., "Electrochemical studies of polyaniline and its application," <u>Synthetic Metals</u> , vol. 18, Elsevier Sequoia, Netherlands, 1987, pgs. 365-370.
	QQQ	Adams, P.N., Devasagayam, P., Pomfret, S.J., Abell, L., Monkman, A.P., "A new acid-processing route to polyaniline films which exhibit metallic conductivity and electrical transport strongly dependent upon intrachain molecular dynamics," <u>J. Phys.: Condens. Matter</u> , vol. 10, IOP Publishing Ltd., United Kingdom, 1998, pgs. 8293-8303.
	RRR	Pomfret, S.J., Adams, P.N., Comfort, N.P., Monkman, A.P., "Advances in processing routes for conductive polyaniline fibres," <u>Synthetic Metals</u> , vol. 101, Elsevier Science, 1999, 724-725.
	SSS	Pomfret, S.J., Adams, P.N., Comfort, N.P., Monkman, A.P., "Electrical and mechanical properties of polyaniline fibres produced by a one-step wet spinning process," <u>Polymer</u> , vol. 41, Elsevier Science Ltd., 2000, 2265-2269.
EXAMINER		DATE CONSIDERED